Wind Energy

Most U.S. wind energy exports currently are destined for only a small group of markets – namely China, Canada, Mexico, and Brazil. These four markets alone will account for over 70 percent of all wind exports through 2016. Yet, continued global investment in the industry outside traditional markets will very likely increase going forward, broadening export opportunities for U.S.-based suppliers. In fact, through 2020, ITA expects the wind sector to overtake solar as the leading renewable energy exporter, accounting for nearly one-third of all exports in the sector.

The wind industry is a large and growing sector with a supply chain that produces thousands of component parts as well as a service sector that is increasingly advanced in its use of technology to design turbines, organize wind farms, and map wind potential. Most of the industry is vertically integrated, but deep supply chains have emerged to provide technology and components to the largest turbine manufacturers.

Importantly, policy uncertainty in the United States has begun to encourage U.S. wind component manufacturers to look abroad for export opportunities. Coupled with a near doubling of wind energy capacity installed outside the United States through 2020, this dynamic should allow the wind sector to surpass solar as the leading renewable energy export industry. Despite ongoing logistical challenges and higher labor costs, ITA expects the market share captured by U.S. exporters to increase in the near-term, rising to around eight percent, as products traditionally used to supply local demand are shipped to international buyers instead.

Overview of Global Export Market Opportunities

The global wind market is in the midst of a recovery after a brief decline in 2013. Orders for nearly all manufacturers have increased year-over-year and turbine prices have stabilized around the world.

According to industry projections, demand should further increase in 2015 before stabilizing slightly in 2016 and beyond. Most demand will be met with locally-sourced products, as the wind industry's preferred method of global expansion has been foreign direct investment. Last year's *Top Markets Report* noted the ongoing shift of the wind energy market towards Asia and other emerging markets and away from traditional European countries.

ITA anticipates this trend to continue to 2016 and accelerate thereafter. China, in particular, will be the focal point of the industry going forward, installing roughly 27 GW of new capacity between now and the end of 2016. Other key markets will include India, Brazil, Canada, the United Kingdom, Mexico, and Turkey.

The largest four export destinations – China, Canada, Mexico, and Brazil – should account for the majority of all U.S. exports in the sector through 2020, as export markets are expected to remain highly concentrated. One market that should support a surprising number of U.S. exports, however, is Egypt, which jumped to #5 on ITA's list of near-term wind export markets – up from #19 in last year's report. With no domestic production capability, Egypt's planned capacity additions will need to be sourced from elsewhere and U.S. exporters, while not dominant in the market, should find opportunities to export competitively. In fact, ITA projects that U.S. exporters will capture roughly one-fourth of all Egyptian

Figure 1: Near-Term Wind Export Markets (2015-2016)

1. **Canada**
   (large market; large share)
2. **China**
   (large market; small share)
3. **Brazil**
   (large market; small share)
4. **Mexico**
   (large market; large share)
5. **Egypt**
   (small market; large share)
6. **Uruguay**
   (small market; small share)
7. **South Africa**
   (large market; small share)
8. **Honduras**
   (large market; small share)
9. **South Korea**
   (small market; small share)
10. **Philippines**
    (small market; small share)

wind imports through 2016 – a higher market share than in most markets globally.

The Wind Energy Export Opportunity in the Near-Term

In markets that are large, but which are far from the United States, only component parts and services will likely be exported. In China, for example, where re-powering existing wind farms with new technology has become a priority, American companies that can provide efficiency solutions may find considerable demand for their expertise.

For manufacturers of large component parts, Latin American markets may provide the greatest opportunity, particularly when pairing their technology with ExIm financing. While these markets will not be the largest wind markets, they may provide an attractive cost environment in which to do business due to lower shipping costs.

Two important competitors have emerged in Latin America that policy-makers should consider when helping firms develop an export strategy. First, Chinese manufacturers now compete directly with American firms – a new phenomenon, since Chinese manufacturers have traditionally focused exclusively on China's domestic market. To compete, U.S. exporters must differentiate between their often higher-cost equipment by focusing on quality.

Second, the largest Latin American market – Brazil – has used local content requirements and high import tariffs to protect and grow its domestic manufacturing base. Today, Brazil has the capability of supplying wind technologies to markets elsewhere in South America, competing for the first time with U.S.-based suppliers. This capability has been limited to date, but will very likely increase, as the Brazilian wind market expands.

If Mexico continues to invest heavily in wind development, it too could become a supplier of low-cost equipment to the region, rivaling both the United States and Brazil. Given the interlinked nature of wind supply chains between Mexico and the United States, this development – while not helpful to export competitiveness – would be far more supportive of export growth than an active and export-minded Brazilian manufacturing sector.

Planning for the Long-Term

ITA expects wind export markets to remain fairly constant through the medium-term. The top five markets are projected to remain the same through both 2016 and 2020 (Canada, China, Brazil, Mexico, and Egypt), although the order should change, with China jumping to #1 thanks to 85 GW of new capacity installations over the next six years.

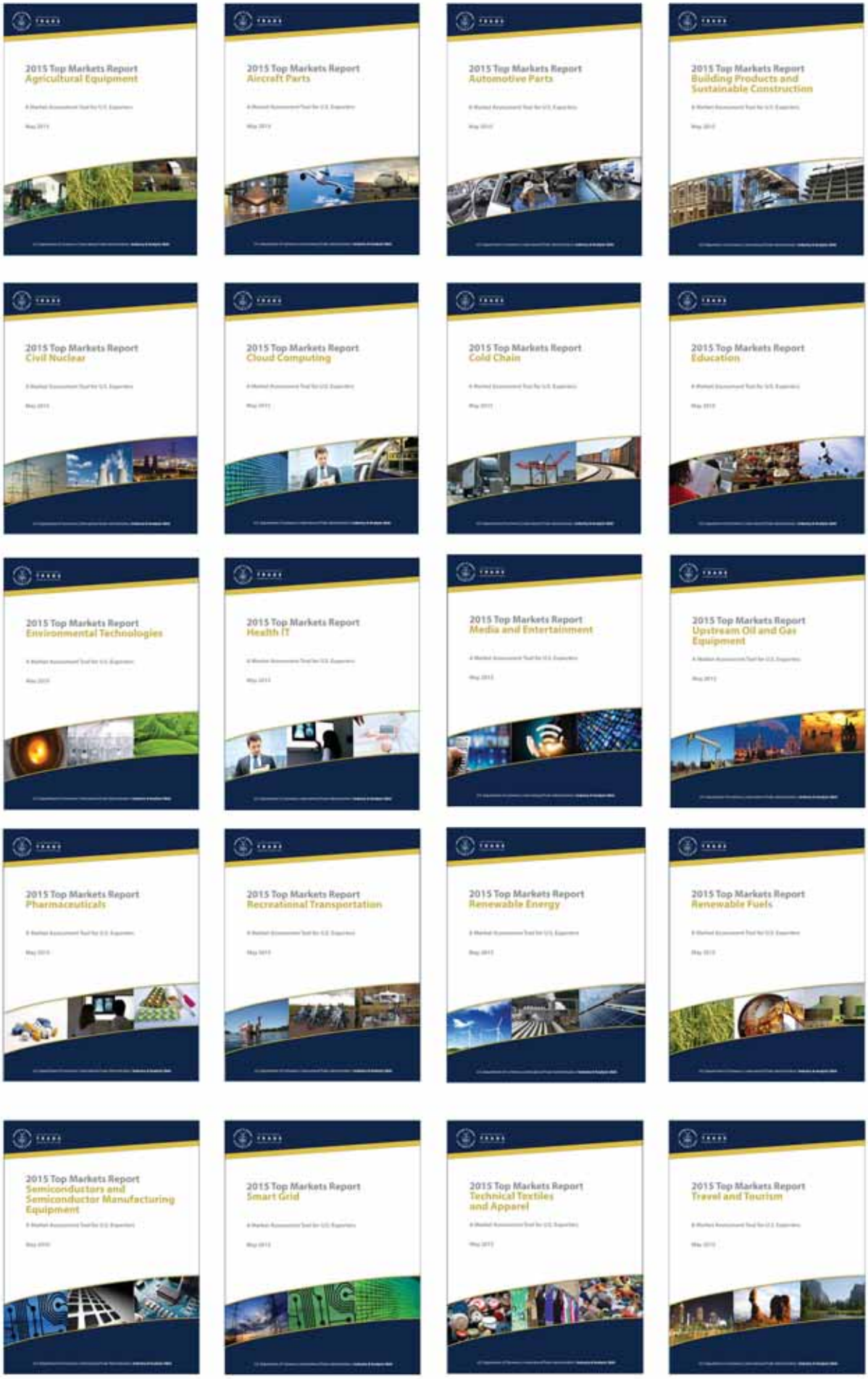
Policymakers should again consider both the size of a country's wind energy import market and the share expected to be captured by U.S. exporters. An effective medium-term strategy must also include an understanding of how market is expected to change, particularly as new, more innovative technologies are developed.

Although wind will always be capital intensive, as prices decline, the importance of upfront cost should lessen, creating an opportunity for more efficient, innovative turbines perhaps produced in the United States. It should also create export opportunities for U.S. service providers that specialize in plant design, engineering, and site assessment.

In Latin America, U.S. exporters are expected to capture over 20 percent of the import market. Thus, priority should be given to market development activities in the region. Eliminating or reducing trade barriers in Brazil should be given specific priority, as no market should support more wind exports than Brazil, particularly in the medium-term.[‡] Yet, local content requirements, which are expected to increase through 2016, intensely limit the export opportunity associated with the market.

The offshore wind market will likely continue to be concentrated in Northern European markets – namely, the United Kingdom and Germany – although some growth can be expected in Japan and China. In some ways, low oil prices may actually help offshore development, as there could be less competition for large crane vessels and thus lower development costs.

[‡] While Brazil is not projected to be the largest wind export market over the medium-term, ITA believes that with policy reforms, the market could become the largest destination of U.S. wind exports.



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